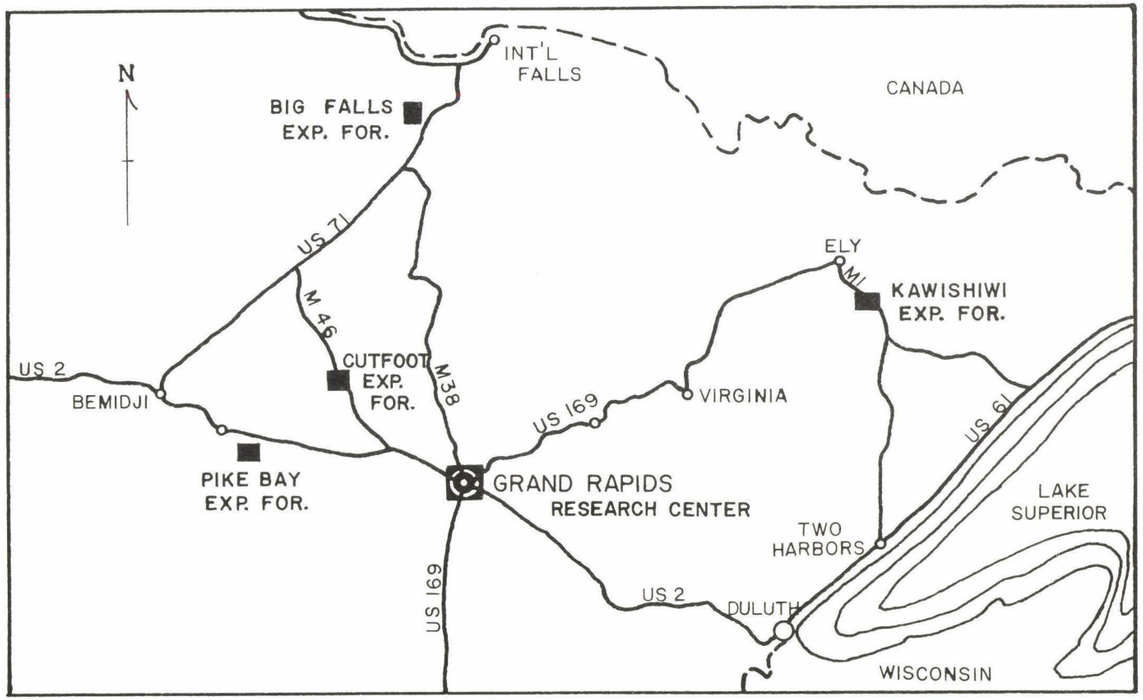
A Cooperative Program

The Lake States Forest Experiment Station, one of the nine regional experiment stations through which the Forest Service, U.S. Department of Agriculture, conducts research, has its headquarters on the St. Paul campus of the University of Minnesota. The Station, responsible for research in Michigan, Wisconsin, Minnesota, and North Dakota, carries on its work at seven field centers. The Grand Rapids Center is located about 1 mile east of Grand Rapids on U.S. Highway 169 at the North Central School and Experiment Station of the University of Minnesota.

As part of the Station's cooperative research program, the Center works with many other groups, such as the National Forests and Bureau of Indian Affairs; State and county agencies, especially the Office of Iron Range Resources and Rehabilitation; the Minnesota Conservation Department, and various departments of the University; industry; and several private research organizations. Such teamwork permits more effective use of funds, personnel, and the knowledge of specialists in many fields.

Most of the Center's work in past years has been conducted on its four experimental forests, which were selected to provide conditions needed for the wide variety of studies under way or contemplated (see map below). The new laboratory facilities will make it possible to broaden the research program and thus supply long-needed answers to basic questions of seed production, seedling germination and establishment on different types of seedbed, insect characteristics and habits, and soil and water relationships.

Research findings are made available currently in Station Papers and Technical Notes. More comprehensive reports are published in scientific or professional journals or as government bulletins. Since 1946 Center personnel have authored 155 technical publications. Copies of these may be obtained by writing to the Director, Lake States Forest Experiment Station, St. Paul Campus, University of Minnesota, St. Paul 1, Minn., or to the Grand Rapids Research Center, Route 3, North Central School Campus, Grand Rapids, Minn.



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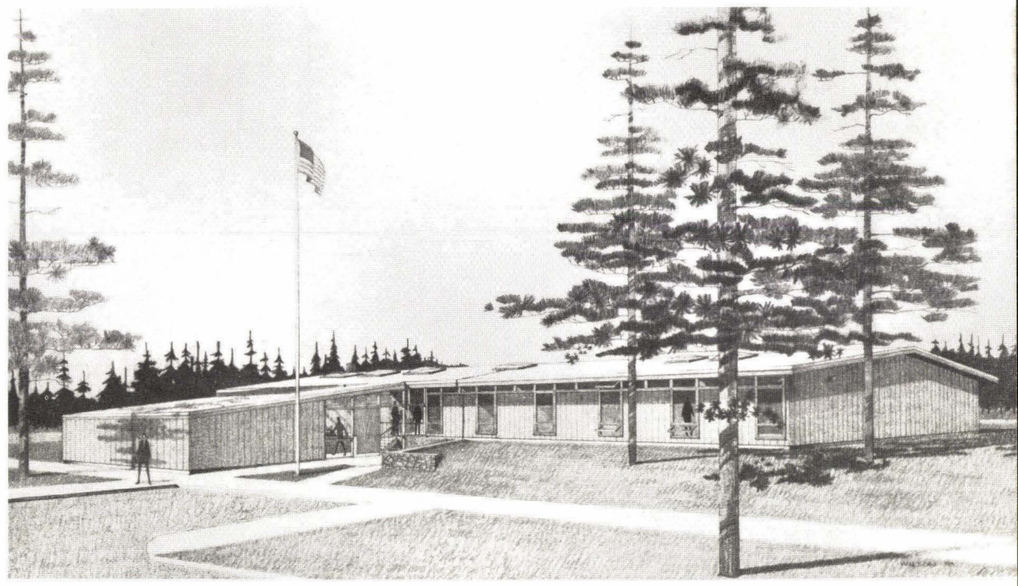
Grand Rapids Forest Research Center, Grand Rapids, Minnesota



LAKE STATES FOREST EXPERIMENT STATION

FOREST SERVICE
U. S. DEPARTMENT OF AGRICULTURE

The Grand Rapids Research Center is a field unit of the Lake States Forest Experiment Station, U.S. Forest Service. The building shown on the cover houses the Center's offices and laboratories. It is located on the campus of the North Central School and Experiment Station, University of Minnesota.

Established in 1946, the Center is responsible for the Station's research program in the management, protection, and use of the important northern conifers — red pine, jack pine, spruce, and balsam fir — and associated hardwoods, primarily aspen, and for related watershed management and bog hydrology studies.

A comprehensive forest research program is important in northern Minnesota, where 80 per cent of the land, or 14½ million acres, is commercial forest. This area is the source of three great river systems, the Mississippi, Rainy, and St. Lawrence. The gross product value of timber cut in 1958 exceeded $200 million. In addition to forest products, the forests provide a great recreation and tourist area.

Continuing research is needed to establish conifers on millions of acres of brush and grass land and areas occupied by nonmerchantable trees; to reduce timber losses from fire, insects, and disease; to improve quality as well as quantity yields; and to find uses for large volumes of low-quality timber now occupying space that should be devoted to better trees.

Pine and spruce stands, reduced by 630,000 acres in Minnesota from 1936 to 1953, present a difficult regeneration problem. In the photo at right a research forester is measuring growth of seedlings established after partial cutting in a red pine stand. Studies like these in field and laboratory will furnish information on seed supplies, seed quality, seed bed, and light requirements for successful natural regeneration.

Aspen on good site, age 37.

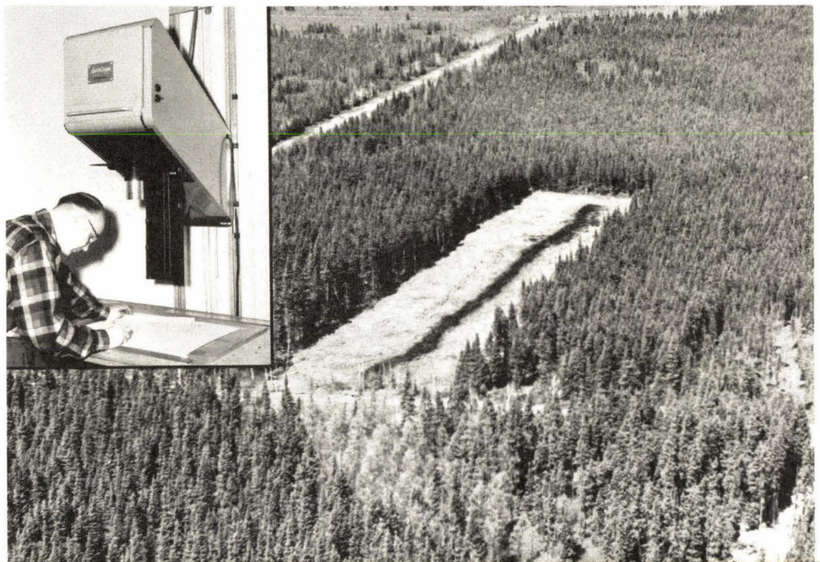
Aspen on poor site, age 47.

Classification of forest sites according to their productivity is basic to other silvicultural studies and to forest management. Forest site studies are under way in aspen and black spruce types. Aspen grows on more than 18 million acres in the Lake States, on soils ranging from light loamy sands to heavy clays. Good sites (left picture) produce high-quality trees while poor sites (right picture) grow only small low-quality trees. Research is aimed at determining soil fertility and water requirements for good growth, the best forest management practices to use on good sites, and methods for converting poor-site aspen to more valuable conifers.

Snow studies (photo at left) have shown that forest management practices can influence the accumulation and melt of snow. Other field studies in watershed management are investigating the soil moisture and soil freezing processes in many forest types. Laboratory studies of basic soil and water relationships will be made under controlled conditions. These experiments in field and laboratory will help explain the hydrology of forested lands in northern Minnesota.

The management of the millions of acres of forested bog and swamp in the Lake States depends on a knowledge of organic soils and water behavior as they affect timber growth. In addition, the effect of management practices on groundwater recharge or as a stablizing influence on streamflow needs to be studied.

For example, in the picture at the right, a clear-cut strip in swamp black spruce illustrates an effective cutting method for obtaining natural reproduction. The inset shows bog topography being mapped to determine its relation to water movement and tree growth.



Losses from various natural causes — fire, wind, diseases, and insects — are greater in Minnesota than in most states. Research under way is aimed at controlling the spruce budworm and jack pine budworm by means of special forest management practices. In the photo at right an entomologist is identifying insect specimens. Inset shows the larva of the spruce budworm.